Malheur National Wildlife Refuge
Burns, Oregon

Narrative Report for Period May 1 to August 31, 1959

Roster of Regular Personnel

John C. Scharff.....Refuge Manager
David B. Marshall.....Wildlife Management Biologist
Leon A. Littlefield, Jr.....Refuge Manager
Noel L. Cagle.....Foreman, Construction & Maint. III
Marselle Leake.....Shop Foreman II
Eugene E. Storm.....Mechanic, Heavy Duty
LeRoy J. Wilson.....Operator, Dragline
Eugene P. Heath, Jr.....Refuge Clerk
Alfred S. Ludi.....Building Repairman
Quentin L. Currey.....Maintenanceman
Thomas B. Davies.....Maintenanceman
Judd A. Wise.....Maintenanceman
Bertram R. Hastings.....Caretaker
Ivan J. Carey.....Clerk-Typist

Temporary Personnel

Elmer T. Ash.....Operator, Dragline
John B. Caviness.....Oiler
Paul G. DuMont.....Laborer
Marvin R. Kaschke.....Student Trainee (Biology)
William C. Kindall.....Oiler
Jack M. Slates.....Operator General (light)
Vernon C. Walker.....Laborer
Gilbert E. Whalen.....Oiler

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Malheur National Wildlife Refuge
Second Period Narrative Report
May 1 to August 31, 1959

I. GENERAL

A. Weather Conditions.

Headquarters Station

	Snowfall	Precipitation This Month	Precipitation Normal		Max. Temp.	Min. Temp.
May	.4	1.22	1.12		90	22
June	.0	.02	1.06		95	32
July	.0	.00	.40		99	33
August	.0	.41	.20		94	38
Totals	.4	1.65	2.78	Extremes	99	22

P-Ranch Station

	Snowfall	Precipitation This Month	Precipitation Normal		Max. Temp.	Min. Temp.
May	.0	1.27	2.09		88	22
June	.0	.22	1.34		93	33
July	.0	.07	.19		103	31
August	.0	.00	.30		96	33
Totals	.0	1.56	3.92	Extremes	103	22

Double-O Ranch Station

	Snowfall	Precipitation This Month	Precipitation Normal		Max. Temp.	Min. Temp.
May	.0	1.71	.80		78	22
June	.0	.22	.93		93	33
July	.0	.00	.71		99	32
August	.0	.00	.14		95	34
Totals	.0	1.93	2.58	Extremes	99	22

Buena Vista Station

	Snowfall	Precipitation This Month	Precipitation Normal		Max. Temp.	Min. Temp.
May	.0	1.19	.09		—	—
June	.0	.17	1.78		—	—
July	.0	.00	.56		—	—
August	.0	.03	.13		—	—
Totals	.0	1.39	2.56	Extremes	—	—

The past four month's records indicate one of the warmest and coldest seasons for at least quite a number of years, if not a new record. Much

damage resulted to crops and plant growth even where water was available for reasonable irrigation both from the extreme heat and cold frosty nights. Precipitation at the refuge headquarters was only about 60% of normal and less than 50% of normal during the year of September 1, 1958 to August 31, 1959. The precipitation which did come was in small showers which were rarely more than enough to settle the dust and resulted in little good to growing vegetation.

B. Habitat Conditions.

1. Water. General water conditions of the refuge and immediate surrounding country was the shortest recorded during the past quarter of a century. Owing to short precipitation and adverse snow melting weather, the predicted stream flows fell way short. No water from Silver Creek and the Silvies River reached the refuge and much acreage served by these streams remained dry. As mentioned in the previously submitted report, the flow of the Blitzen River fell way short of the earlier run-off prediction and much of the Blitzen Valley remained dry throughout the summer. By the close of the period the Blitzen River was running less water than anytime since 1934.

On May 8, Malheur Lake stood at 4092.9 and by August 12 the surface elevation had dropped to 4090.98 which reflects almost two feet of decline during the period. Unless some early fall rains are enjoyed it may be expected that Malheur Lake will further recede during the fall period.

2. Food and Cover. Food conditions for waterfowl this period were the poorest since the drouth of the 1930's. This condition applied equally well to all parts of the refuge with the exception of Harney Lake which retained a good supply of water from last year. The more sheltered shore lines of this lake produced some widgeongrass (Ruppia maritima). The only aquatic or submerged plant growth in Malheur Lake consisted of watermilfoil (Myriophyllum). Most of the water area of Malheur Lake was void of growth. Low water levels and absence of water in the Blitzen Valley and Double-O held food production there to a minimum.

With the exception of Harney Lake, cover is more than adequate for waterfowl over the refuge. Our main trouble with cover is too much rather than not enough.

The grain crop in refuge grain fields was for the most part a failure because of the lack of moisture and frosts. What little grain that did develop was largely taken by blackbirds.

Low water levels and resulting exposure of mud flats made ideal shorebird conditions during the period. The fall migration of shorebirds on Malheur Lake was particularly heavy. Low water levels also concentrated carp populations in shallow water. This made food conditions ideal for pelicans, herons and egrets. However, since

most of this period's fish populations consisted of large fish, food conditions for the small fish eaters like the terns and grebes were not as good as the past three years.

Drouth conditions, which created poor growth in upland areas, resulted in depleted food supplies for upland game and big game species.

II. WILDLIFE

A. Migratory Birds.

1. Waterfowl. Little change over the past two years in the over-all use days for ducks and geese for the period was noted. For the second year in a row, however, coot was declined. The most striking item about the period was the almost total absence of waterfowl production. Despite the presence of as many potential breeding ducks and geese as seen in recent years, a major share of the ducks, geese and coots failed to nest. More specific information for the period follows by sections.

Nesting Period. Breeding pairs counts were continued as in the past, but it was possible to sample more areas than in the past through the use of additional help in this project. The method used in these counts is covered in the report for a year ago. During the course of the breeding pair counts it became evident that few ducks were actually nesting. Most ducks failed to pair off into territories. Practically no nests were found. One would not find the ducks defending territories or consistently see pairs or lone drakes at the same location. Small groups of ducks gathered at various locations having water or followed the water about according to irrigation practices. Why did the ducks fail to nest? We will never know for sure. Possible answers could be overcrowding of available nesting habitat, or the short periods in which much of the habitat was flooded. It appears there were too many birds for the carrying capacity of the habitat. The same number of potential nesting ducks were crowded into less than half the habitat that was available to them last year. The above statements applied fairly well to geese also and even more so to coots. Good coot nesting habitat was almost entirely absent. Predation probably played a greater role than normal, as coyote populations were especially heavy and the absence of mammals made many coyotes turn their attention to birds. One coyote was noted to systematically cover the artificial nesting islands in the Dredger Pond.

Species composition of the breeding pair counts was similar to last year with the exception of a shortage of redheads, canvas backs and coots.

Brood Period and Production. Brood counts were carried out as in the past to obtain comparative data on production. Table 1 sum-

marizes the general production picture as compared to last year. Since Boca Lake had to be drained, this major duck brood concentration point did not fit into the picture this year. The only significant brood pond was the Benson Pond. A few broods also appeared on Malheur Lake. Elsewhere practically no duck broods were seen. Goose broods were most prevalent on Malheur Lake.

Table 1. Status of waterfowl production on Malheur Refuge. 1959 compared with 1958

Canada Goose	42% of a year ago
Mallard	12% of a year ago
Gadwall	13% of a year ago
American Widgeon	Only 1 brood seen--2 a year ago
Pintail	No broods seen--9 a year ago
Green-winged Teal	Only 1 brood seen--4 a year ago
Blue-winged & Cinnamon Teal	80% of a year ago
Shoveler	No broods seen--8 a year ago
Redhead	7/10% of a year ago
Canvasback	No broods seen--3 a year ago
Ruddy Duck	Only 1 brood seen--6 a year ago
All Ducks	13% of a year ago
Coot	4/10% of a year ago

Migration. The usual June build-up of pintails did not occur this year. We understand such a build-up occurred at Tule Lake this year whereas it has been absent in the past. Migrant pintails did not appear here until the forepart of July. Later migrant widgeon, shovelers, gadwalls and green-winged teal appeared. Points frequented by the migrants included the watermilfoil beds in the center part of Malheur Lake, the mud flats of the east side of Malheur Lake and the shore lines of Harney Lake. Redheads and canvasbacks were almost entirely absent. Canada geese moulted east of Cole Island, on Harney Lake and the north side of Malheur Lake.

Trumpeter Swan Project. No trumpeter swans were produced here this year so far as known. During May isolated pairs of trumpeter swans appeared in practically every unit of the refuge. These pairs gradually disappeared during the summer. By mid-August only eight of a possible 35 or 40 trumpeter swans were known to remain on the refuge. By the end of the period a few of these missing birds reappeared. We hear of reports from Warner Valley and the Klamath Basin of possible trumpeter swans and wonder if they could be some of our missing birds. We cannot express any surprise over this disappearance or lack of nesting, as conditions for swans at the present time are very poor in this area.

2. Other Waterbirds. Population numbers of cormorants, herons and egrets remain about the same. Except for the black-crowned night heron, these birds, especially the cormorants, had a very successful year. Food supplies were more than adequate. The egrets and cormorants nested with great blue herons in bulrushes to the east of Graves Point. Scattered great blue heron colonies were located all along the north shore of the lake in heavy bulrush clumps. One colony was located east of Cole Island Dike. Black-crowned night herons started nesting in bulrush between the Haley Place and the Narrows. The colony was abandoned when this area became dry. Some nesting by this species took place about 1½ miles southeast of George Lake. As was the case last year, no white-faced ibis nests were found. It is believed, however, that this species nested somewhere within the vast bulrush stands of Malheur Lake and was overlooked, as ibis were present on Malheur Lake throughout the summer.

This is a banner year insofar as white pelican numbers are concerned. This species is present in perhaps the largest numbers known here. Throughout the latter half of the period, it is estimated that at least 25,000 were present. For the first time in many years, white pelicans nested on Malheur Lake. The nesting took place on a section of Cole Island Dike lying between two breaks and on a bulrush covered island to the west. These colonies were about a mile north of the northernmost Cole Island trapper's cabin. They had a sad ending. The colony on the isolated section of Cole Island became joined with the mainland through receding water. An inspection of it on June 17 saw most of the eggs hatching. A return trip on June 29 saw the disappearance of all eggs and young with fresh coyote tracks in evidence. The colony on the nearby bulrush island was hatching on June 29, but upon inspection on July 21 no young or adults were present; either dead or alive. About 60 pairs of white pelicans nested on Harney Lake on two islands where nesting took place last year. Only seven young were successfully raised to maturity at these two colonies.

It is believed sandhill crane nesting was somewhat less successful than in the past several years due to the low water conditions. The absence of a good grain crop in the Blitzen Valley saw the late summer concentration of cranes fall short of normal numbers there.

Horned grebes appeared at a number of locations in the Blitzen Valley in May. This species was found nesting there for the first time in Oregon last year. No nests were actually found this year, although more horned grebes were seen. Numbers of western grebes and eared grebes were noticeably down on Malheur Lake and in the Blitzen Valley. This is believed due to low water and the scarcity of fingerling carp. A colony of several hundred western grebes at the mouth of Silver Creek on Harney Lake was wiped out by heavy wave action. No renesting was observed. In early June a concentration of eared grebes estimated at 25,000 birds was observed from the air on Harney Lake.

3. Shorebirds. The NR forms for this report contain a long list of shorebirds observed this period. Everything in the shorebird line that one could possibly expect to see were seen this period plus two species not previously known from here. The latter species, a semipalmated plover and a sanderling, were collected. Four birds of each species were seen. Snowy plovers, killdeers, common snipe, long-billed curlews, spotted sandpipers, willets, avocets, stilts and Wilson's phalaropes were all in plentiful supply during the nesting season. It is difficult to explain how black-necked stilts were plentiful this year when last year the species was seen on about three occasions only. July and August saw large concentrations of migrant shorebirds on mud flats in Malheur Lake created by receding water. Credit for many of the shorebird observations and population numbers listed this period goes to Mr. Paul DuMont who spent a number of evenings observing shorebird concentrations from Cole Island Dike.

A large Caspian tern colony which contained around 200 nests was present on the long island or sand spit extending out from the south shore of Harney Lake. It is also believed a small California gull colony was present here. No gull colonies were found on Malheur Lake.

4. Doves. No dove counts were made, but general observations indicate doves are in plentiful supply.

B. Upland Game Birds. Numbers of upland game are down somewhat this year. With the exception of California quail, little reproduction appears to have taken place this year. Chukars have declined in numbers in particular.

C. Big Game Animals. Little successful reproduction took place in antelope herds this year and numbers are in general down from last year. Mule deer numbers continue to decline on the refuge. Last year's mouse plague and this year's dry condition has made for poor food conditions for big game species for the second year in a row. Many deer are in poor physical condition and a major die off can be expected in this area this fall and winter.

D. Fur Animals, Predators, Rodents, and other Mammals. Major die offs of mice, jack rabbits and muskrats occurred in recent months. One seldom sees a mouse of any kind and jack rabbits, although present, are not a problem. Muskrats continued to die out on Malheur Lake during May, June and July. Recent airboat operations on the lake have failed to turn up a single muskrat.

With the populations of the above animals down, the large coyote population brought about by last year's good moisture conditions and abundant rodent numbers is hard pressed for food. Coyotes are present on the refuge in the largest numbers seen in recent years. In part they probably represent animals that have moved in from surrounding areas which no longer have water. Many of these animals appear thin

and weak. A stepped-up coyote control program is scheduled for this winter, but possibly in the meantime some of these animals will die of starvation or disease.

E. Hawks, Eagles, Owls, Crows, Ravens, and Magpies. No obvious change in population numbers occurred in this group except for a further reduction in numbers of red-tailed and Swainson's hawks. There was little for the mouse eaters to eat and no influx of short-eared owls was noted.

F. Other Birds. A number of minor changes in the refuge bird list were made this period through observations made on species which were noted for the first time during spring or summer. Included was a May record for the Bonaparte's gull, summer records for the northern phalarope, Nashville warbler, Townsend's warbler and MacGillivray's warbler and the addition of the semipalmated plover, sanderling and Swainson's thrush to the list. Arrival dats of summer birds which arrived this period and not covered elsewhere are as follows: common nighthawk, May 26; Lewis's woodpecker, May 2; eastern kingbird, May 9; Traill's flycatcher, May 2; western wood pewee, May 18; warbling vireo, May 13; orange-crowned warbler, May 11; yellowthroat, May 2; yellow-breasted chat, May 4; Wilson's warbler, May 2; bobolink, May 28; black-headed grosbeak, May 6; lazuli bunting, May 6; American goldfinch, May 4; lark sparrow, May 2; Brewer's sparrow, May 2; and golden-crowned sparrow, May 6.

G. Fish. The status of carp numbers and conditions on Malheur Lake remind us very much of 1955, the year of the rotenone treatment of the lake. Most of the carp fall between 6 and 24 inches in length. They are present everywhere in the lake. The near absence of fingerling carp suggests the carp have reached a so-called "saturation point" as in 1955. By next Spring we can expect a reduction in carp numbers which could give temporary relief. We do not know what poundage of fish a pelican eats in a day, but if we were to assume they eat two pounds of fish per day, the pelicans present on the lake this period would have consumed over three million pounds of carp. Additional amounts will be consumed in September. Three-hundred-thousand or more pounds of carp were killed through use of rotenone in the Blitzen River and Sod House Spring this period. The purpose of this operation was to rid the Sod House Spring of carp before screening. The combination of low water and a cold winter could kill many carp on Malheur Lake this winter.

On the sports fishing side, 4,000 legal sized rainbow trout were planted in the Blitzen in May near the P Ranch. Fishing success in the Blitzen was good early in the season, but dropped off toward the end of the period.

Fishing on Krumbo Lake has been good to excellent, but only light fishing pressure has been experienced there. The rainbow trout planted there in April have shown excellent growth with some going as high as 15 inches by the end of the period.

I. Disease. Probably no more than 100 ducks died on Malheur Lake this period.

It was assumed the cause of death was botulism. Sick birds were first noted on July 21.

III. REFUGE DEVELOPMENT AND MAINTENANCE

A. Physical Development.

1. Restoration of Dikes, Bridges, Roads, and Structures. Six hundred forty cubic yeards of gravel and shale was hauled to repair canal banks and structures.

The East Canal in the P-Ranch Unit was repaired and bank raised in the vicinity of Knox Swamp.

Twenty-two miles of road was graded, one bridge was replaced with a 48" metal pipe and a smaller bridge replaced with a 36" metal pipe.

The flashboard headgate at Sod House Spring outlet for the display pool was changed from the downstream end to the upper end of the pipe and screens installed to exclude the carp.

A number of levies in the Double-O unit were repaired and roads raised ready for surfacing in the amount of about 3,720 cubic yards.

2. Additional Marsh Development. Some work was accomplished toward completion of the headquarters display pool and all materials received for this job by the end of the period.

The middle levee of the West Swamp Development was completed, 42,381 cubic yards of earth being handled. Two 24" metal pipes with headgates were installed in this unit of development. Work was initiated on the lower levee of this unit.

The Bridge Creek cleaning job was completed in the amount of 44,705 cubic yards.

3. Carpenter Department. At the Witzel Patrol Station the sewer system was rebuilt and a new toilet installed in the dwelling.

A new restroom was provided on the first floor of the Frenchglen Hotel.

Four new toilets were constructed and placed in operation at Krumbo Lake along with trash cans for use of the public.

A hot water heater was installed in the service building bunk room.

A number of bins and drawers were provided in the carpenter shop at Buena Vista to store pipe fittings, nails, bolts and other materials.

The bunk house at the P-Ranch was moved on to a new cement foundation and is in the process of a complete new renovation.

The cool furnace in Quarters No. 1 was removed and a new oil furnace with fuel tanks installed in its place. The old cool furnace served well having been in use twenty-three years.

4. Repairs to Equipment. Ten 5,000 mile checks were made on automotive equipment.

New King pins and brakes were installed on pick-up 1-49336.

One dump truck, the fire truck and rotocutter were given pain jobs.

Valve and ring jobs were accomplished on vehicles 1-49501 and 1-18317 and the P&H dragline motor. A new head was also installed on the P&H dragline.

A major overhaul was done on the Koehring dragline motor.

A new and much needed domestic water pump was provided for and installed at the refuge headquarters.

Numerous small jobs such as greasing, replacing broken springs, shock absorbers, washing, steam cleaning, tire changing, and repair of minor parts of vehicles and equipment were accomplished during the period.

A number of field trips were made to the dragline and outlying stations for the repairing of equipment which could not be brought to the shop for repairing.

5. Other Maintenance Jobs. Considerable time was required in repairing fences about Malheur Lake as the water receded. On the east end of the lake one stretch of a mile and half of completely new fence was required. Quite a number of corners required rebuilding and in several instances the lower two wires required replacing as the wire in place had rotted away.

The usual maintenance work about stations was performed such as painting screens, window shutters and gates.

The oil house at the refuge headquarters received a new coat of paint and also one of the Rome dwellings.

B. Plantings.

1. Aquatics and Marsh Plants. None.

2. Trees and Shrubs. None.

3. Upland Herbaceous Plants. None.

4. Cultivated Crops. Six hundred fifty-one and one-half acres of rye, barley and wheat were sown by refuge personnel during this period.

Due to lack of moisture, frost and heavy use by sandhill cranes and blackbirds, the crop was very poor. So poor that no harvesting will be done this year.

There was no planting on the 350 acre cooperative area at the Double-O this year. Due to poor moisture conditions this acreage was summer fallowed.

About 225 acres of grain was sown on the Mud Lake cooperative planting area, but due to lack of moisture and an untimely freeze a very poor crop was realized.

C. Collections and Receipts.

1. Seed or other Propagules. None.

2. Specimens. For the establishment of new regional records, a sanderling and two semipalmated plovers were collected this period. One of each was sent to the National Museum. The second semipalmated plover specimen was turned over to a taxidermist for use in the refuge museum. A Swainson's thrush was also collected at the P-Ranch to establish the presence of this species on the refuge and for identification purposes. This specimen was also turned over to the National Museum. Dates of collection were May 4 for the plovers, May 20 for the sanderling, and June 3 for the thrush. The sanderling was taken on Harney Lake and the plovers on Malheur Lake.

D. Control of Vegetation. Nothing new to report.

E. Planned Burning. Nothing new to report.

F. Fires. One reportable fire was had during the period. This was a lightning fire experienced on July 21 located in Malheur Lake bed. Owing to the ground cover, this fire has broken out a number of times and may be expected to break out on occasion until such time as the area is covered by a good soaking rain.

IV. RESOURCE MANAGEMENT

A. Grazing. Forage production on the refuge is considerably above the average of the county, but below average for the refuge lands. On the Double-O unit the part irrigated by springs is normal or perhaps a little above. However, the part dependent upon Silver Creek for

water is much below average and will furnish little forage for winter use. Some fall grazing will be provided, however, and a little carry over of hay on this unit will augment the winter use.

On the Blitzen Valley some fields are above normal production, but most of the fields are well below average.

The Malheur Lake unit will reflect an over all increased grazing use, not so much from increased acreage production, but from increased area made available by the recession of the water in Lake Malheur.

V. FIELD INVESTIGATION OR APPLIED RESEARCH

A. Aquatic Plant Survey of Malheur Lake. Beginning in 1956, aquatic plant surveys have been made on Malheur Lake to obtain some measure of the growth and extent of sago pondweed and other aquatic plants. This year such a survey seemed unnecessary, as the extent of aquatic plant growth in the lake was sufficiently small to make general observations adequate. A small area of sago pondweed developed in June along the west side of Pelican Island, but this area went dry soon thereafter. In the north center portions of the lake about 2,000 acres of watermilfoil (Myriophyllum exalbescens) were present. Most of this growth was within that part of the lake having hardstem bulrush growth. Some smartweed growth was present in the pond east of Vicker's Lake, but this area went dry. Otherwise no submerged aquatic plant growth was present on Malheur Lake this period.

B. Waterfowl Banding. Banding of pintails on Harney Lake was initiated the last day of this period. Attempts to attract pintails to a spring feed pond on the southeast side of Malheur Lake were unsuccessful. A report on banding operations will appear in the next report.

C. Experimental Summer Grazing. Experimental summer grazing was continued in Knox Field and initiated in South Diamond Swamp. For the second year in a row, water conditions were poor in Knox Field. South Diamond Swamp had practically no water. Before conclusions can be reached on the grazing of these areas, water conditions will have to be normal and several years grazing will have to take place.

VI. PUBLIC RELATIONS

B. Refuge Visitors. Refuge visitors and those of special note during the period were as follows:

May

1-8	Richard Pfeifer, Photographer, Portland, Oregon
1	Ray Novotny, Harney County Extension Agent, Burns, Oregon
3-5	Dick and Ada Bird, Photographers, Regina, Saskatchewan, Canada

7 Ray Glahn, Pilot Biologist, Portland, Oregon.
8-12 Dr. Arthur Allen, Cornell University, Ithica, New York.
David G. Allen, Lab. of Ornithology, Cornell University, Ithica, New York.
9-10 Dr. Arthur Remple, Whitman College, Walla Walla, Washington.
16 Dr. Alex D. Beltz, George Fox College, Newberg, Oregon.
19-22 Fred K. Truslow, National Geographic Photographer, Summit, New Jersey.
21 Mr. and Mrs. Alex Walker, Pioneer Museum, Tillamook, Oregon.
21-22 Dr. O. H. Muth, Oregon State College, Corvallis, Oregon.
Dr. S. E. Knapp, Oregon State College, Corvallis, Oregon.
27 John E. Chattin, Pacific Flyway Representative, Portland, Oregon.
Clinton H. Lostetter, Branch Management and Enforcement, Portland Oregon.
29-31 Leo Simon, Audubon Society, Portland, Oregon.
Martha Ann Platt, Audubon Society, Portland, Oregon.
Norbet Leupold, Audubon Society, Portland, Oregon.
30 Fred A. Anderson, Tigard, Oregon.

June

1 Richard Pfeifer, Photographer, Portland, Oregon.
2 Mark Morton, Fishery Management Biologist, Portland, Oregon.
Ray Novotny, Harney County Extension Agent, Burns, Oregon.
3 William V. Taylor, Branch of Engineering, Washington, D.C.
Arthur G. Huey, Regional Engineer, Portland, Oregon.
Dougall, Branch of Engineering, Portland, Oregon.
5 Ray Glahn, Pilot Biologist, Portland, Oregon
6 J. Malcolm Loring, Forest Supervisor, John Day, Oregon.
14-27 Michael Wooten, Photographer, Centralia, Washington.
17 Dr. J. M. Shaw, Oregon State College, Corvallis, Oregon.
18 Robert Mace, Oregon State Game Commission, Portland, Oregon.
Clark Walsh, Oregon State Game Commission, Portland, Oregon.
20 E. R. Jackman, Oregon State College, Corvallis, Oregon.
Charles Smith, Oregon State College, Corvallis, Oregon.
21 Henry DuBois, Oregon Audubon Society, Clackmas, Oregon.
23-24 Fred Kreller, U.S. Game Management Agent, Pendleton, Oregon.
26 John Gatlin, Jr., Regional Director, F.W.S., Albuquerque, New Mexico.
26-27 H. W. Belknap, College of Idaho, Nampa, Idaho.
28-30 Richard R. Pfeifer, Photographer, Portland, Oregon.
30 Miller Nicholson, Portland School System, Portland, Oregon.
28-7/4 Willis E. Keithly, University of Oregon, Eugene, Oregon.
Dr. Don Hemphill, University of Oregon, Eugene, Oregon.

July

4 Albert Olofson, Alderwood Manor, Washington.
7 Robert Mace, Oregon State Game Commission, Portland, Oregon.
14 Ray Novotny, Harney County Extension Agent, Burns, Oregon.
16 Ray Glahn, Pilot Biologist, Portland, Oregon.
19 W. H. Berry, S.C.S., Washington, D.C.

19 Thomas Horn, Assistant Refuge Supervisor, Portland, Oregon.
Justice W. O. And Mrs. Douglas, Washington, D.C.
24 P. W. Schneider, Oregon State Game Director, Portland, Oregon.
Oliver A. Petrie, Multnomah Chapter Izaak Walton League, Portland, Oregon.

August

13 Ray Glahn, Pilot Biologist, Portland, Oregon.
18-20 Jay Long, Oregon State College Wildlife Management School, Corvallis, Oregon.
23 Phil A. DuMont, U.S.F.W.S., Washington, D.C.
Watson Beed, Branch of Wildlife Refuges, Portland, Oregon.
26 Robert Mace, Oregon State Game Commission, Portland, Oregon.
Ray Glahn, Pilot Biologist, Portland, Oregon.
27 Jas. Dahl, Elko, Nevada, Special Representative Sec. of Agriculture Benson.
J. B. McBurney, State A.S.C. chairman, Portland, Oregon.
Glen Hutchinson, State Committee, A.S.C., Portland, Oregon.
Don J. Kudrna, State Committee, A.S.C., Ontario, Oregon.
Newton Hotchkiss, County Chairman, A.S.C., Burns, Oregon.
Gary N. Goodfellow, County Secretary, A.S.C., Burns, Oregon.

C. Refuge Participation. On May 1, Professor Robert Bratz and H. W. Belknap from College of Idaho, Caldwell, Idaho, visisted the refuge with a group of thrity students and instructors on a general "birding" trip over the area. The group was here through May 3 and during their stay had the opportunity to see Dick Pfeifer's picture, "Wings Over Blitzen Valley" which was enjoyed very much.

The annual visit of the Seventh Day Adventist group took place during the period of May 1-3; the afternoon of May 2 and forenoon of May 3 being spent in the field. The part was broken up into three field groups which were shown about by refuge personnel. This group also had the opportunity to see Dick Pfeifer's "Wings Over Blitzen Valley". Approximately sixty were in the Seventh Day Adventist group.

During the afternoon of May 3, Refuge Manager Scharff showed the well known wildlife lecturers and photographers, Dick and Ada Bird of Regina, Saskatchewan, over the Blitzen Valley part of the refuge.

Dr. Arthur Remple with a group of eighteen students visited the refuge during the period of May 8 through the 10th. This group was shown about by refuge personnel.

Dr. Arthur Allen of Cornell University, Ithica, New York, and his son, David Allen, spent the period of May 9 through May 12 on the refuge and adjacent areas photographing birds and making sound recordings. Refuge Manager Scharff and Biologist Marshall worked with them during their stay and directed them to areas suitable to their work.

On May 14 a meeting of local land use agencies was attended by

Refuge Manager Scharff. This meeting was called by Oregon State Game Commission personnel to discuss the settings of state game seasons and other matters relating to the use of public land by the general public. Eighteen were in attendance at the meeting representing the Forest Service, Bureau of Land Management, State Extension Service, Squaw Butte Experiment Station, Oregon State Game Commission and Fish and Wildlife Service.

During the period of May 19 through 22 Fred Truslow, photographer for the National Geographic Magazine visited the refuge for close-up pictures of trumpeter swans. Mr. Truslow was routed here by Dr. Allen for swan pictures which would be difficult to secure elsewhere. Refuge personnel assisted Mr. Truslow in his work when possible to do so.

On May 30-31 a group of about forty Oregon Audubon Society members led by Norbet Leupold visited the refuge. Refuge Biologist Marshall and Refuge Manager Scharff spent both days leading groups over the refuge. A buffet dinner was enjoyed by this group on May 30 at The Frenchglen Hotel, after which slides of refuge wildlife were shown. Coffee and cookies were served at the refuge headquarters upon arrival by the refuge wives.

On June 6 the John Day Oregon Chapter of the Society of American Foresters visited the refuge about thirty strong. A buffet lunch was enjoyed at the Frenchglen Hotel where Refuge Manager Scharff and Assistant Manager Littlefield met the group and showed them about the Blitzen Valley part of the refuge. The refuge headquarters and museum was visited during the late p.m.

An Episcopal Sunday School group consisting of seven adults and twenty-eight children was shown about the museum and the Blitzen Valley part of the refuge by Refuge Manager Scharff on Sunday, June 7.

Refuge personnel assisted County Agent Novotny in hosting the annual Harney County Grass tour for lunch at the Refuge Headquarters on June 20. Approximately 330 folks were present for lunch. The tour took place in the immediate community of the refuge headquarters on nearby ranches and on the refuge.

On June 27 and 28 the Boise Camera Club visited the Malheur Refuge fourteen strong. Refuge Manager Scharff spent the afternoon of June 27 out in the field with this group and Biologist Marshall accompanied them on June 28.

On July 15 Refuge Manager Scharff attended a regular meeting of the Harney County Chapter of Izaak Walton League where final plans were made for the Portland Chapter meeting to be held on Steen Mountain. On July 20 a committee meeting was attended by Manager Scharff at which time plans were completed for the dinner to be served.

On August 19 a slide lecture was given to a Burns Church School group of thirty-two children and six adults by Refuge Manager Scharff.

Eugene P. Heath Jr. attended a Clan "B" Radiological Monitoring School during the period of June 21-26 at Reed College, Portland, Oregon.

Bertrum R. Hastings, Refuge Caretaker resigned effective July 11, 1959.

Clerk Ivan Carey spent April 27 through May 2 assisting on clerical work at the Sheldon Refuge.

During the period of July 3 through August 4 Eugene P. Heath spent taking a wage rate survey in the vicinity of Alturas and Canby, California and Lakeview, Oregon assembling data to combine with information already assembled about Burns, Oregon for recommending new wage rates for the Sheldon, Hart Mountain and Malheur Refuges.

Assistant Manager Leon Littlefield spent the period of August 17 through 21 attending a Safty Instruction Seminar which was held in Portland, Oregon.

Thirty students from the Hines Grade School were conducted on a bird observation trip on Cole Island Dike on May 14.

Refuge Manager Scharff and Biologist Marshall attended an Izaak Walton League meeting in Burns on June 17.

An ornithology class of 15 students headed by Bill Belknap from College of Idaho was taken on a field trip by Biologist Marshall on June 27.

An ornithology class of 20 students headed by Dr. Robert M. Storm from Oregon State College was taken on a field trip by Biologist Marshall on July 11.

Biologist Marshall attended the Izaak Walton League "show-me" trip on Steens Mountain on July 25 and helped provide transportation for this event.

VII. OTHER ITEMS

A. Items of Interest. On May 4, Eugene Storm reported for duty as Heavy Duty Mechanic, filling the position vacated by Earl Irvine transferring to the Tule Lake Refuge at Tule Lake, California. It goes without saying that everyone was happy to see this position filled once more as the services of two mechanics on this refuge is almost indispensible.

On May 5 arrangements were made for Dick Pfeifer to show his picture, "Wings Over Blitzen Valley", to the Burns Chamber of Commerce at their noon weekly lunch. Thirty-two were in attendence. Dick and Ada Bird were also introduced at this gathering.

Refuge Manager Scharff attended Harney County Chamber of Commerce lunch meetings and Directors meetings on May 5, 26 and July 1, 29.

On May 30 Fred A. Anderson and family visited the refuge for a brief time. Fred started his career in Government Service on the Malheur Refuge as clerk in 1935. He transferred from here to New Orleans, La., thence to Atlanta, Georgia, thence to the Washington Office. Upon his return from serving as a Naval Officer during World War II, he was assigned to the Regional Office in Portland, Oregon. He resigned from Government Service to enter private law practice and has a very active practice in Tigard, Oregon.

On June 17 a regular meeting of the Harney County Chapter of the Izaak Walton League was attended in Burns by Refuge Biologist Marshall and Refuge Manager Scharff.

On June 26 Regional Director and Mrs. J. C. Gatlin of Albuquerque, New Mexico paid the Malheur Refuge an unexpected visit. A most pleasant day was spent in the Blitzen Valley with lunch at the Frenchglen Hotel.

Early in July Albert and Lottie Olofson spent several days visiting refuge personnel and friends about the refuge. Albert served as maintenance man about the Buena Vista area from 1936 until his retirement in February, 1955.

Refuge Manager Scharff attended the last evening of the American Society of Range Management Youth Camp held in Logan Valley on the Malheur National Forest on August 7 in the capacity of a Director of the Northwest Section of the Society. This was a most successful camp with fifty-six boys in attendance from the range counties in Oregon.

Fire drills were held on May 14 and August 13. The latter of the two drills was a night drill.

On February 19 a refuge safty committee was appointed consisting of Messers. Littlefield, Cagle and Heath. During this period regular meetings were held on May 15, June 19, July 17 and August 28. On July 8 a special meeting was called to investigate and report upon an accident sustained by Eugene Heath while mowing his yard.

On June 8 Marvin R. Kaschke reported for duty in the student trainee position on this refuge. Marvin we believe has had a well rounded out trainee program and so far as all refuge personnel is concerned, he may return for permanent assignment at any time.

On July 12 Noel L. Cagle met with an off job accident which resulted in a broken pelvis and other minor injuries. Noel spent considerable time in the hospital, but had returned home by the end of the period and started working part time.

On July 3 Eugene P. Heath met with an accident which resulted in

severe injury to a finger. While this did not result in a lost time accident, Mr. Heath has been severely handicapped in his work.

Seven hundred thirty-one lost time accident free days were recorded at the end of the period.

B. Photographs.

C. Composition Credits.

J. C. Scharff: Text Section I A; Section III A in collaboration with Mr. Cagle; Section III F; IV; VI B; all but last 5 paragraphs VI C; and VII A.

David B. Marshall: Sections IB; II; III C; V; last 5 paragraphs VI C; Photograph captions and all photographs unless otherwise credited; and all NR forms.

Leon A. Littlefield, Jr.: Section III B.

Noel L. Cagle: Weather table Section I A; Section III A in collaboration with Mr. Scharff.

D. Signature.

September 18, 1959
Report Completed

Approved Regional Office

J. C. Scharff - Refuge Manager

59-47. 6/20/59. Lunch line during annual Harney County Grass Tour. Group ate lunch at refuge headquarters and toured neighboring ranches.

59-48. 6/20/59. Some idea of the size of the crowd which visited the refuge during annual Harney County Grass Tour can be gained from this photo.

59-51. 7/22/59. Aerial view of fire between Campbell Ranch and Vickers Lake on south side of Malheur Lake. This photo was taken immediately after the fire was brought under control. Smoke is still visible in upper left corner of fire. Fire guard put in by dozers shows along lower (south) edge of fire.

59-62. 8/5/59. Mopping up after above fire continued to end of period. Here smoke and dust boils up from an underground "hot spot."

Alfred Ludi Photo. Typical of jobs accomplished by carpenter shop during period was these toilets destined for fisherman use at Krumbo Lake.

59-53. 7/16/59. Equipment recently rebuilt in refuge shop includes the above. All but the Farmall tracter were acquired from surplus sources. The fire truck on the left was constructed from a military bomb service truck.

59-45-17. 7/15/59. Common snipe in typical pose on fence post. This species was abundant this summer.

59-35-8. 6/29/59. Nesting colony of common and snowy egrets as viewed from photo blind with conventional lens. The egret photos in the following pages were taken of some of the same birds with telephoto lenses.

59-41-11. 6/30/59. Close-up of photographic blind built in egret colony in bulrush stand on Malheur Lake.

59-39-7. 6/30/59. Snowy egret with plumes extended standing in front and to right of one of its young.

59-33-8. 6/26/59. The common egret presents an almost wicked appearance when compared to the smaller and dainty snowy egret.

59-39-16. 6/30/59. Pair of snowy egrets at nest. The upper adult is feeding young.

3-1750
Form NR-1
(Rev. March 1953)

WATERFOWL

REFUGE MALHEUR NATIONAL WILDLIFE MONTHS OF May TO August, 1959

(1) Species	(2) Weeks of reporting period: 5/3-9 (1)	5/10-16 (2)	5/17-23 (3)	5/24-30 (4)	5/31-6/6 (5)	6/7-13 (6)	6/14-20 (7)	6/21-27 (8)	6/28-7/4 (9)	7/5-11 (10)
Swans:										
Whistling										
Trumpeter	36				18					
Geese:										
Canada	6,000				5,000					
Cackling										
Brant										
White-fronted										
Snow										
Blue										
Other Total Geese	6,000				5,000					
Ducks:										
Mallard	13,000				10,000					
Black										
Gadwall	7,000				9,300					
Baldpate	1,700				1,400					
Pintail	900				500					
Green-winged teal	4,400				1,000					
Blue-winged teal	100				800					
Cinnamon teal	7,000				13,000					
Shoveler	4,000				1,300					
Wood					1					
Redhead	2,100				5,600					
Ring-necked										
Canvasback	500				300					
Scaup	500				300					
Goldeneye	2				2					
Bufflehead	8				2					
Ruddy	34,000				2,100					
Other C. Merganser	100				50					
Total Ducks	75,310				45,655					
Coot:	70,000				23,000					

Int. Dup. Sec.,
Wash. D. C.

3 -1750a
Cont. NR-1
(Rev. March 1953)

WATERFOWL
(Continuation Sheet)

REFUGE Malheur National Wildlife MONTHS OF May TO August, 1959

(1) Species	(2) Weeks of reporting period: 7/12-18 (11)	7/19-25 (12)	7/26-8/1 (13)	8/2-8 (14)	8/9-15 (15)	8/16-22 (16)	8/23-29 (17)	(18)	(3) Estimated waterfowl days use	(4) Production: Broods seen	Estimated total
Swans:											
Whistling											
Trumpeter	18				8	8	13		2,275		2
Geese:											
Canada	3,000				2,300	3,000	3,400		483,000	20	1,300
Cackling											
Brant											
White-fronted											
Snow											
Blue											
Other Total Geese	3,000				2,300	3,000	3,400		483,000	20	1,300
Ducks:											
Mallard	5,700				8,200	8,000	4,300		1,023,400	5	600
Black											
Gadwall	7,200				19,000	20,000	23,000		1,291,500	30	2,000
Baldpate	1,500				32,000	10,000	5,700		695,100	1	50
Pintail	34,000				12,000	7,000	7,300		1,494,500		
Green-winged teal	1,400				3,300	8,000	8,000		334,600	1	30
Blue-winged teal	100								33,600		300
Cinnamon teal	1,000				1,400	1,500	1,300		678,300	9	2,500
Shoveler	500				10,000	15,000	20,000		532,000		
Wood									5		
Redhead	3,200				1,100	1,000	500		6,083,005 378,000	6	100
Ring-necked											
Canvasback	200				10	10	10		28,280		
Scaup											
Goldeneye									16		
Bufflehead									34		
Ruddy	3,100				1,500	5,000	5,000		987,210	1	10
Other C. Merganser							10		3,570	2	20
Total Ducks	57,900				88,510	75,510	75,120		6,397,116 7,500,000 7,480,115	74	5,600
Coot:	13,000				24,000	21,000	21,000		3,360,000	6	300

(over)

	(5) Total Days Use	(6) Peak Number	(7) Total Production
Swans	2,275	36	0
Geese	483,000	6,000	1,300
Ducks	~~7,500,000~~ 7,480,115	88,500	5,600
Coots	3,360,000	70,000	300

Corrected 3/15/67 JHH

SUMMARY

Principal feeding areas Malheur and Harney Lakes

Principal nesting areas Blitzen Valley and Double-O

Reported by David B. Marshall - Biologist

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

(1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.

(2) Weeks of Reporting Period: Estimated average refuge populations.

(3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.

(4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.

(5) Total Days Use: A summary of data recorded under (3).

(6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.

(7) Total Production: A summary of data recorded under (4).

Interior Duplicating Section, Washington, D. C. 37944
1953

3-1751
Form NR-1A
(Nov. 1945)

MIGRATORY BIRDS
(other than waterfowl)

Refuge Malheur National Wildlife Months of May to August 1959

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. Water and Marsh Birds:										
Horned Grebe			20	5/10	1	5/15		?	?	20
Eared Grebe			27,000	6/5				200	?	30,000
Western Grebe			900	6/1	3	8/26		300	300	1,000
Pied-billed Grebe			2,000	8/1				400	?	2,000
White Pelican			25,000	8/1			3	420	7	30,000
Double-crested Cormorant			700	6/15				200	300	1,000
Great Blue Heron			2,000	7/15			7	500	800	2,500
Common Egret			1,500	7/15			6	400	700	2,000
Snowy Egret			800	8/1			3	200	350	1,000
Black-crowned Night Heron			1,000	6/1			2	150	100	1,000
Least Bittern	1	6/1			1	6/1		?	?	10
American Bittern			100	6/1				?	?	100
White-faced Ibis			100	5/15			?	?	?	100
Sandhill Crane			1,500	8/31				400	300	2,000
Virginia Rail	Present thru period in unknown numbers									
Sora	Present thru period in unknown numbers									
II. Shorebirds, Gulls and Terns:										
Semipalmated Plover	5	5/4	5	5/4	1	8/8				10
Snowy Plover			600	6/15	2	8/18		200	?	600
Killdeer			10,000	7/15				3,500	?	20,000
American Golden Plover	1	5/28			1	8/24				1
Black-bellied Plover	2	5/4			2	5/4				2
Common Snipe			3,000	8/15				?	?	4,000
Long-billed Curlew			1,500	6/15				500	?	1,500
Spotted Sandpiper			300	7/15				?	?	300
Willet			1,000	6/1				300	?	1,500
Greater Yellowlegs			500	8/1						1,000
Lesser Yellowlegs	1	7/20	50	8/31						100
Baird's Sandpiper	5	7/28	100	8/31						300
Least Sandpiper			100	8/15						500
Dunlin	10	5/4			10	8/18				100

(over)

(1)	(2)	(3)		(4)	(5)	(6)
III. Doves and Pigeons:						
Mourning dove		2,000	8/31			3,000
White-winged dove						
IV. Predaceous Birds:						
Golden eagle		15	8/1			15
Duck hawk						
Horned owl		300	8/31			300
Magpie		3,000	7/1			3,000
Raven		500	5/1			500
Crow		50	5/1			50
Marsh Hawk		1,500	7/1			1,500
Red-tailed Hawk		30	7/1			30
Swainson's Hawk		50	5/1			50

Reported by David B. Marshall

INSTRUCTIONS

(1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiiformes)
II. Shorebirds, Gulls and Terns (Charadriiformes)
III. Doves and Pigeons (Columbiformes)
IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)

(2) First Seen: The first refuge record for the species for the season concerned.

(3) Peak Numbers: The greatest number of the species present in a limited interval of time.

(4) Last Seen: The last refuge record for the species during the season concerned.

(5) Production: Estimated number of young produced based on observations and actual counts.

(6) Total: Estimated total number of the species using the refuge during the period concerned.

INT.-DUP. SEC., WASH., D.C.

M17058

3-1751
Form NR-1A
(Nov. 1945)

MIGRATORY BIRDS
(other than waterfowl)

Refuge Malheur National Wildlife Months of May to August 1959

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. Water and Marsh Birds:										
II. Shorebirds, Gulls and Terns: (Continued)										
Dowitcher species ?			70,000	8/31						100,000
Western Sandpiper			15,000	8/15						25,000
Unidentified Peeps			30,000	8/15						50,000
Marbled Godwit	1	5/18	40	7/16						100
Sanderling	4	5/19			4	5/20				4
American Avocet			7,000	8/13				250	?	8,000
Black-necked Stilt			900	7/21				35	?	1,000
Wilson's Phalarope			10,000	8/1				1,000	?	15,000
Northern Phalarope	2	6/10			2	6/20				10
California Gull			500	7/15						500
Ring-billed Gull			6,000	8/31						8,000
Bonaparte's Gull	2	5/25			2	5/25				2
Franklin's Gull			100	6/15				?	?	100
Forster's Tern			2,000	7/1	3	8/26		700	?	2,000
Caspitan Tern	2	5/2	400	8/1			1	200	200	400
Black Tern			4,000	8/1	10	8/18		1,500	?	4,000

(over)

(1)	(2)		(3)	(4)	(5)		(6)
III. Doves and Pigeons:							
Mourning dove							
White-winged dove							
IV. Predaceous Birds:							
Golden eagle							
Duck hawk							
Horned owl							
Magpie							
Raven							
Crow							

Reported by .....

INSTRUCTIONS

(1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiiformes)
II. Shorebirds, Gulls and Terns (Charadriiformes)
III. Doves and Pigeons (Columbiformes)
IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)

(2) First Seen: The first refuge record for the species for the season concerned.

(3) Peak Numbers: The greatest number of the species present in a limited interval of time.

(4) Last Seen: The last refuge record for the species during the season concerned.

(5) Production: Estimated number of young produced based on observations and actual counts.

(6) Total: Estimated total number of the species using the refuge during the period concerned.

INT.-DUP. SEC., WASH., D.C.

M17058

3-1750
Form NR-1B
(December 1956)

UNITED STATES
DEPARTMENT OF THE INTERIOR
Fish and Wildlife Service

WATERFOWL UTILIZATION OF REFUGE HABITAT

Refuge Malheur National Wildlife For 12-month period ending August 31, 1959

Reported by David B. Marshall Title Biologist

(1) Area or Unit Designation	(2) Habitat Type	(2) Habitat Acreage		(3) Use-days	(4) Breeding Population	(5) Production
Double-O 1	Crops	0	Ducks	3,089,000	9,500	200
	Upland	11,300	Geese	1,221,000	400	50
	Marsh	6,200	Swans	7,600	2	
	Water	1,800	Coots	1,754,000	7,300	100
	Total	19,300	Total	6,071,600	17,202	350
Harney L. 2	Crops	0	Ducks	4,496,000	20	
	Upland	15,300	Geese	163,000	4	
	Marsh	0	Swans	1,700		
	Water	30,000	Coots	2,391,000		
	Total	45,300	Total	7,051,700	24	
Mud L. 3	Crops	780	Ducks	1,000,000	400	
	Upland	1,900	Geese	433,000		
	Marsh	120	Swans	1,100		
	Water	200	Coots	49,000		
	Total	3,000	Total	1,483,100	400	
West Malheur L. 4	Crops	0	Ducks	1,587,000	2,100	1,000
	Upland	3,500	Geese	235,000	1,200	600
	Marsh	8,000	Swans	56,000	2	
	Water	4,700	Coots	960,000	200	
	Total	16,200	Total	2,838,000	3,502	1,600
Center Malheur L. 5	Crops	0	Ducks	3,771,000	1,300	1,000
	Upland	300	Geese	239,000	600	300
	Marsh	15,500	Swans	23,000	6	
	Water	8,500	Coots	7,587,000	6,000	900
	Total	24,300	Total	11,620,000	7,906	2,200
East Malheur L. 6	Crops	0	Ducks	4,796,000	500	200
	Upland	5,500	Geese	264,000	100	100
	Marsh	1,000	Swans	164,000		
	Water	7,000	Coots	965,000	400	
	Total	13,500	Total	6,189,000	1,000	300
Sagebrush Fld. Area 7	Crops	52	Ducks	185,000	2,000	100
	Upland	18,840	Geese	105,000	600	
	Marsh	1,000	Swans	800		
	Water	190	Coots	114,000	600	50
	Total	20,082	Total	404,800	3,200	150

(over)

All tabulated information should be based on the best available techniques for obtaining these data. Estimates having no foundation in fact must be omitted. Refuge totals for all categories should be provided in the spaces below the last unit tabulation. Additional forms should be used if the number of units reported upon exceeds the capacity of one page. This report embraces the preceding 12-month period, NOT the fiscal or calendar year, and is submitted annually with the May-August narrative report.

INSTRUCTIONS

(1) Area or Unit: A geographical unit that, because of size, terrain characteristics, habitat type and current or anticipated management practices, may be considered an entity apart from other areas in the refuge census pattern. Estimated acreage of each unit should be indicated.

(2) Habitat: Crops include all cultivated croplands such as cereals and green forage, planted food patches and agricultural row crops; upland consists of all uncultivated terrain lying above the plant communities requiring seasonal submergence or a completely saturated soil condition a part of each year, and includes lands whose temporary flooding facilitates use of non-aquatic type foods; marsh extends from the upland community to, but not including, the water type and consists of the relatively stable marginal or shallow-growing emergent vegetation type including wet meadow and deep marsh; and the water category includes all other water areas inundated most or all of the growing season and extends from the deeper edge of the marsh zone to strictly open-water areas, embracing such habitat as shallow playa lakes, deep lakes and reservoirs, true shrub and tree swamps, open flowing water and maritime bays, sounds and estuaries. Acreage estimates for each type should be kept as accurate as possible through reference to available maps supplemented by periodic field observations and should agree with unit acreage.

(3) Use-days: Use-days is computed by multiplying weekly waterfowl population figures by seven.

(4) Breeding Population: An estimate of the total breeding population of each category of birds for each area or unit.

(5) Production: Estimated total number of young raised to flight age.

Interior Duplicating Section, Washington, D. C.
1956

3-1750
Form NR-1B
(December 1956)

UNITED STATES
DEPARTMENT OF THE INTERIOR
Fish and Wildlife Service

WATERFOWL UTILIZATION OF REFUGE HABITAT

Refuge Malheur National Wildlife For 12-month period ending August 31, 19 59

Reported by David B. Marshall Title Biologist

(1) Area or Unit Designation	(2) Habitat Type	(2) Habitat Acreage		(3) Use-days	(4) Breeding Population	(5) Production
Buena Vista Area 8	Crops	200	Ducks	565,000	4,400	100
	Upland	2,720	Geese	78,000	350	50
	Marsh	2,000	Swans	500	2	
	Water	0	Coots	143,000	1,000	
	Total	4,920	Total	786,500	5,752	150
Diamond Area 9	Crops	0	Ducks	309,000	4,000	1,500
	Upland	2,610	Geese	87,000	500	100
	Marsh	6,280	Swans	2,400	2	
	Water	750	Coots	226,000	2,500	100
	Total	9,640	Total	624,400	7,002	1,700
Krumbo Grain Camp 10	Crops	600	Ducks	483,000	3,000	100
	Upland	4,890	Geese	124,000	60	
	Marsh	1,380	Swans	1,000		
	Water	70	Coots	122,000	1,400	
	Total	6,940	Total	730,000	4,460	100
Boca L. Area 11	Crops	0	Ducks	1,019,000	2,800	900
	Upland	4,920	Geese	188,000	500	75
	Marsh	3,190	Swans	9,000	2	
	Water	690	Coots	967,000	800	25
	Total	8,800	Total	2,183,000	4,102	1,000
P. Ranch Area 12	Crops	0	Ducks	985,000	12,000	500
	Upland	5,195	Geese	116,000	550	50
	Marsh	6,665	Swans	1,000	2	
	Water	220	Coots	388,000	2,000	
	Total	12,080	Total	1,490,000	14,552	550
	Crops		Ducks		42,020	5600
	Upland		Geese			1325
	Marsh		Swans			
	Water		Coots			1175
	Total		Total			
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			

(over)

All tabulated information should be based on the best available techniques for obtaining these data. Estimates having no foundation in fact must be omitted. Refuge totals for all categories should be provided in the spaces below the last unit tabulation. Additional forms should be used if the number of units reported upon exceeds the capacity of one page. This report embraces the preceding 12-month period, NOT the fiscal or calendar year, and is submitted annually with the May-August narrative report.

INSTRUCTIONS

(1) Area or Unit: A geographical unit that, because of size, terrain characteristics, habitat type and current or anticipated management practices, may be considered an entity apart from other areas in the refuge census pattern. Estimated acreage of each unit should be indicated.

(2) Habitat: Crops include all cultivated croplands such as cereals and green forage, planted food patches and agricultural row crops; upland consists of all uncultivated terrain lying above the plant communities requiring seasonal submergence or a completely saturated soil condition a part of each year, and includes lands whose temporary flooding facilitates use of non-aquatic type foods; marsh extends from the upland community to, but not including, the water type and consists of the relatively stable marginal or shallow-growing emergent vegetation type including wet meadow and deep marsh; and the water category includes all other water areas inundated most or all of the growing season and extends from the deeper edge of the marsh zone to strictly open-water areas, embracing such habitat as shallow playa lakes, deep lakes and reservoirs, true shrub and tree swamps, open flowing water and maritime bays, sounds and estuaries. Acreage estimates for each type should be kept as accurate as possible through reference to available maps supplemented by periodic field observations and should agree with unit acreage.

(3) Use-days: Use-days is computed by multiplying weekly waterfowl population figures by seven.

(4) Breeding Population: An estimate of the total breeding population of each category of birds for each area or unit.

(5) Production: Estimated total number of young raised to flight age.

Interior Duplicating Section, Washington, D. C.
1956

3-1752
Form NR-2
(April 1946)

UPLAND GAME BIRDS

1613

Refuge Malheur National Wildlife Months of May to August, 19 59

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'v'd.	Estimated Total	Percentage	Hunting	For Re-stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Sage Grouse									200	
California Quail									6,000	
Ring-necked Pheasant									4,500	
Chukar									25	
Gray Partridge									10	

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

(1) SPECIES: Use correct common name.

(2) DENSITY: Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.

(3) YOUNG PRODUCED: Estimated number of young produced, based upon observations and actual counts in representative breeding habitat.

(4) SEX RATIO: This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available.

(5) REMOVALS: Indicate total number in each category removed during the report period.

(6) TOTAL: Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.

(7) REMARKS: Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested.

* Only columns applicable to the period covered should be used.